

NPIC/TSSG/PPS-160-68  
9 July 1968

MEMORANDUM FOR: Chief, Technical Services & Support Group, NPIC

SUBJECT: [ ] Contract; Significant Tasks for Consideration in FY-69

1. I understand there are approximately [ ] in unexpended funds in this contract. This won't go very far in its specified object class (R&D), but I believe it can be most efficiently and effectively used in financing some [ ] support in selected R&D project areas.

2. To my knowledge these funds are not transferrable to any other NPIC contracts; therefore, if they are not utilized by the time OSA terminates this contract (presently planned at the end of FY-69), they will be returned to a reserve fund and NPIC will have no further opportunity to use them at the discretion of management. On the other hand, the funds [ ] required for the [ ] overrun will be drawn from such a reserve fund and will not deplete our potential support for external R&D. Any utilization of the [ ] other than for new R&D projects will appear to invalidate our previous R&D fund requests, which indicated that any budget cuts below [ ] would seriously jeopardize our ability to keep up with the advancing acquisition systems. "Our highways would not keep pace with the automobiles" to use [ ] analogy. Our latest FY-69 budget looks something like this:

Original Congressional Budget  
Less IIS  
Less Advance Funding (HPSC)  
Less Imposed Reduction

Balance

3. If we utilize the funds to support NPIC R&D projects at [ ] there are numerous tasks which are both significant and relevant to NPIC which [ ] is well-qualified to assume. A list and discussion of some of these projects is attached.

Declass Review by NGA.

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SUBJECT: [ ] Contract; Significant Tasks for Consideration in FY-69

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4. One word of caution: In spite of [ ] photographic expertise and their familiarity with the operational mission acquisition, processing and exploitation systems, under our budgetary circumstances we cannot afford [ ] type of management unless a more extensive R&D contract program is contemplated for [ ] in which case a CCB system (previously suggested) could be utilized. Otherwise, any project we support there must have close, competent, dedicated monitoring to keep it well-correlated to NPIC operations and policy. Previously we have not had the manpower to accomplish this in every case.

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[ ]  
Chief, Projects & Programs Staff, TSSG, NPIC

Attachment:

As stated above

Distribution:

Orig. -- NPIC/TSSG/Ch  
2 -- NPIC/TSSG/PPS  
1 -- NPIC/TSSG/TAS  
1 -- NPIC/TSSG/TAD  
1 -- NPIC/TSSG/TPD  
1 -- NPIC/TSSG/DED

ATTACHMENT TO  
NPIC/TSSG/PPS-160-68  
D-R-A-F-T

NPIC/TSSG/PPS  
9 July 1968

PROJECTS FOR  CONSIDERATION

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I. STUDIES

A. Selected Area (Chip) Duplication System: Study of this entire system to any appreciable depth would cost many times the existing funds. However, there are numerous sub-groups and components in such a system which are begging for answers:

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2. Where? Should selected area duplication (SAD) be performed  Westover, NPIC (Photo Lab/PI's) or some combination of these?

3. How? Should SAD be a total/partial frame or a specific format chip? What size?

4. Automation? Should ON have exposure # code? Intermediate frame position codes? Should dupe (frame or CHIP) have accession # code? Target name? B.E.#? etc.? Should storage and retrieval be automated? Should printing/processing be automated?

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5. Equipment Design Characteristics:

- a. Step and Repeat Frame/Chip Printer



- b. Chip Processor.

- c. Chip Viewer (Direct/RP).

- d. Chip Storage and Retrieval.


- e. PI Chip Maker

(1) Cutter.

(2) Printer/Processor

(a) Diazo

(b) Dry Silver (3M)

B. Film Distortion Analysis: Heretofore, film distortion analyses have been performed in relation to mapping requirements rather than intelligence requirements. Consequently, we still do not know the distortion characteristics of TB or UTB over distances less than 1 centimeter -- often very significant to many P.I. measurements which are often no longer than 50 - 100 microns (.005 - .01 cm). A specific task for evaluating TB and UTB film/emulsion distortions over short distances (approximately 1 mm) is a valid requirement and most appropriate for the  staff.

C. Acquisition/Reproduction Gamma and Density Scale: There is a difference of opinion on the ideal gamma for acquisition film and read-out duplicates. Obviously, these are interrelated. P.I.'s seem to prefer a relatively high gamma 1.5 - 2.0 or even higher, but there is an identifiable information loss compared to a lower gamma reproduction -- other things being equal. A similar problem

exists with the new reversal duping stock which provides a high quality 2nd generation dupe neg but also has a very critical density scale matching problem. Definition of gamma/density scale objectives and development of means for attaining them are required.

25X1 D. High-Performance Auto-Dodging Printer: One means of  
25X1 minimizing the above problem would be to develop a high-performance, auto-dodging [ ] type) printer. [ ] has done some work under [ ] but they were apparently stumped. Some stimulation from the work we have done in this area might break this log jam and solve a very basic and important problem in the information transfer during the duplication process.

25X1 E. Digital Image Restoration: Coordination with and support of the work [ ] may be appropriate and beneficial.

F. Applied R&D in Photographic Technology. This consultant service -- planned for the Tech Ops contract -- was deferred due to lack of funds. It could logically be restored through this channel.

25X1 G. Simulated Imagery: This work is still in the FY-69 program  
25X1 [ ] It is intended to provide imagery simulating film size, frame size, scale, resolution and geometry of oncoming systems. [ ] could do this and the [ ] could be made available to support other projects which were deferred from the FY-69 program.

H. Target Delineation Chip Maker: This item was deferred from the FY-69 budget due to reduction in funds. [ ] could perform comprehensive design and feasibility studies with these funds [ ]

I. Rectifier Design: It appears that we need a rectifier -- for bi-color if for nothing else -- there is still much work to be done in conceiving, developing, and designing rectifiers for our specific requirements.

J. Bi-Color System Analysis: Investigations into the means whereby KH-4 type bi-color materials could most effectively be exploited are required. A system design is appropriate.

## II. HARDWARE

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A. Color Film/Print Dryer: This item, required to match NPIC photo lab processing capability is in the FY-69 Program at [ ] should be able to accomplish prototype development within this funding [ ] thereby releasing funds for other deferred projects.

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B. Improved Data Code Block Recorders and Readers: Due to limitations in this area, [ ] is requesting elimination of the Code Block [ ] Appropriate R&D could relieve this situation.

C. Liquid Gate Development: [ ] is working in this area. 25X1  
Our support may bring this work to fruition in solving specific NPIC equipment problems requiring improvement in both implementation and optical performance of liquid gates.